

SYMPTOMS OF OCCUPATIONAL STRESS IN CONSTRUCTION PROFESSIONALS: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Construction professionals are particularly vulnerable to stress due to the demanding and high-risk nature of their work. However, they often remain unaware of their elevated stress levels, which can lead to negative consequences for both their personal well-being and overall job performance. Despite the significance, there has been limited research on stress among construction professionals. This study aims to conduct a Systematic Literature Review (SLR) to identify stress symptoms among construction professionals. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method filtered the search from 216 articles to 22. The studies were screened based on inclusion criteria, and relevant data were categorised into psychological, behavioural, and physical/physiological symptoms. The analysis identified 41 psychological symptoms (such as anxiety, depression, and irritability), 44 individual behavioural symptoms (including changes in eating and sleeping patterns and increased substance use), nine organisational behavioural symptoms (such as absenteeism and high turnover rates), and 20 physical/physiological symptoms (including headaches, muscle tension, and fatigue). The findings highlight the extensive impact of stress on construction professionals' mental, emotional, and physical health. The paper contributes to the existing body of knowledge by categorising stress symptoms and emphasising the need for holistic stress management strategies. It offers practical insights for employers, policymakers, and healthcare providers to develop targeted interventions to enhance the well-being and productivity of construction professionals. The findings also provide a foundation for future research to explore the long-term effects of stress and evaluate the efficacy of interventions in this high-risk population.

Keywords: Construction Professionals; PRISMA; Stress; Symptoms.

1. INTRODUCTION

Work-related stress is a phenomenon that constantly increases in severity (Vlăduț & Kállay, 2010). According to a study by the Chartered Institute of Building (CIOB, 2006), 68.2% of Construction Professionals (CPs) had suffered from stress, anxiety, or depression as a direct result of working in the construction industry, and 84% of the CPs felt that stress in the construction industry was one factor responsible for the poor

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retention of CPs in the sector (Kumar & Jeswani, 2018). Moreover, construction is a dynamic, complicated, and crisis-ridden industry that works quickly (Chan et al., 2012), and construction-related occupations are most vulnerable to stress (Ojo et al., 2019).

A 2020 global survey of 2,081 construction industry professionals found high incidents of stress (97%), anxiety (87%), depression (70%), fatigue (96%), poor concentration (95%), feeling over-whelmed (91%), and low self-confidence (86%), experienced at least once within the last twelve months (van Heerden et al., 2024). Further, several studies on stress management concerning professionals working in different fields, such as education (Bakhuys Roozeboom et al., 2020) and healthcare (Salam, 2016), have been conducted. However, there are few studies conducted on directing stress and stress management of CPs such as Project managers (Naoum et al., 2018), Engineers (Hazeen & Umarani, 2022), Architects and CPs (Saikala & Selvarani, 2015) and as common for CPs (De Silva et al., 2017; Dodanwala & Santoso, 2022; Kamardeen, 2022). Workplace accidents can be connected to workers' mental health, with factors such as age, physical demands, and particularly the long working hours of construction professionals contributing significantly to stress, anxiety, and fear (Gómez-Salgado et al., 2023). Further, the unawareness of CPs about their stress is a common problem (Bowen et al., 2013). This unawareness will aggravate their stress levels (Chan, 2011). In addition, unawareness will delay taking necessary precautions (Sousa et al., 2014). Hence, identifying stress symptoms is the first step in stress management. Even though studies are identifying the symptoms of CPs stress, very few SLRs have been conducted to synthesise the findings in the literature and get a holistic idea. Therefore, this paper aims to systematically review existing literature on the symptoms of stress of construction workers. This paper introduces work-related stress and stress management construction, directing to the research objectives. Next, a literature review on stress and stress management will be discussed. Subsequently, the research method, results and discussion will be presented.

2. LITERATURE REVIEW

2.1 STRESS AND STRESS MANAGEMENT

The word 'stress' is derived from the Latin word 'stringere', which means to draw tight (Oladinrin et al., 2014; Ross, 2020). Further, Ross (2020) mentions that in the 14th century, "stress" was associated with adversity, hardship, or some affliction. In the 17th century, stress was described as hardship, strain, adversity, or affliction (Oladinrin et al., 2014). Fontana (1989), as cited in Chow (2009), defines stress as those challenges that excite us and keep us on our toes, and without stress, life for many people would ultimately become dull and not worth living. This study focussed on the harmful effects of stress, which could be overcome by managing it. Jeffrey (2006) defined stress as a state of cognitive, emotional, and physical arousal (Oladinrin et al., 2014), which links up with the perspective of the human body. Kalia (2002) and Spielberger et al. (2003) identified stress as an epidemic (Ajayi et al., 2019). Thus, its management deserves attention. Greenberg (2017) mentions that the goal of stress management should not be to eliminate stress but to learn how to manage and use it effectively.

2.2 SYMPTOMS OF STRESS OF CONSTRUCTION PROFESSIONALS

The Health and Safety Executive (2004) states that around half a million people in the UK experience work-related stress at a level that they believe is making them ill, and up to five million people feel “very” or “extremely” stressed by their work and work-related stress costs society about £3.7 billion every year (Donald et al., 2005). Hence, how stress will make a person ill is worthwhile to study. A person who is under stress will show some signs and symptoms. According to Lehrer et al. (2007), as cited by Kushwaha (2014), the first signs that indicate individuals may suffer from excessive pressure or stress are changes in behaviour or appearance. In research, Sommerville and Langford (1994) further categorised stress symptoms into three aspects as Oladinrin et al. (2014), as presented below in Table 1.

Table 1: Three aspects of stress symptoms

Definition	Description	Reference
Psychological Symptoms	Include lack of concentration, tenseness and other symptoms that can be regarded as possible illnesses, such as depression and paranoia.	Oladinrin et al., (2014)
Behavioural Symptoms	Include irritability, lack of effort, excessive consumption of food and beverages, and withdrawal from the work environment that is trying to retreat from commitments.	
Physical Symptoms	Include cardio-bronchial pains, weight loss from under-eating, and sleeping at abnormal times.	

Accordingly, stress symptoms have been categorised as Psychological, Behavioural and Physical.

2.3 IMPORTANCE OF IDENTIFYING SYMPTOMS OF STRESS FOR CONSTRUCTION PROFESSIONALS

As many global and local researchers have outlined, identifying stress symptoms among CPs is imperative for several reasons. Table 2 presents the summary of identified factors.

Table 2: Importance of identification of stress symptoms

Aspect	Description	Reference
Impact on Physical Health	The physical demands of construction work, including heavy lifting, prolonged standing, and exposure to hazardous environments, significantly contribute to stress among workers. Identifying stress symptoms early is crucial because prolonged stress can exacerbate physical health issues such as cardiovascular diseases, musculoskeletal disorders, and chronic pain.	Enshassi et al. (2016)
Mental Health Consequences	Construction workers face high risks of anxiety, depression, and burnout due to job insecurity and high-performance demands. Recognising symptoms like persistent sadness, irritability, and concentration	Love et al. (2010); Tijani et al. (2021); Torres et al. (2023)

Aspect	Description	Reference
	difficulties enables timely mental health support and intervention.	
Safety and Productivity	Stress negatively impacts workplace safety and productivity. Stressed workers are prone to errors and accidents. Identifying symptoms such as insomnia and impaired judgment helps implement strategies to enhance safety and maintain productivity.	(Koulinas et al., 2023; Wong et al., 2023)
Economic Implications	Stress in the construction sector leads to costs associated with lost productivity, absenteeism, and healthcare. Early identification of stress symptoms allows for proactive measures, reducing these economic burdens.	Chan et al. (2018)
Improving Workplace Culture	Addressing stress fosters a positive workplace culture, leading to higher job satisfaction, better team cohesion, and enhanced morale. Recognising stress symptoms is essential for building a supportive work environment.	Peterson & Wilson, (2015); Wei et al., (2020)
Legal and Ethical Considerations	Employers have a legal and ethical obligation to ensure employee well-being. Addressing stress symptoms demonstrates a commitment to health and safety, enhancing organisational trust and compliance with occupational health regulations.	Allen et al. (2014); Chin et al. (2018); Lockwood et al. (2017)

Accordingly, identifying stress symptoms is vital in several aspects, such as impact on physical health, mental health consequences, safety and productivity, economic implications, improving workplace culture, and legal and ethical considerations.

By recognising and addressing these symptoms early, stakeholders in the construction industry can implement effective strategies to support worker well-being and foster a healthier, more productive workforce. Therefore, a thriving need arises to investigate the symptoms of stress in the early stages and minimise the stress of construction workers in the construction industry.

3. METHODOLOGY

In this study, the literature search was conducted using the systematic review technique, a widely adopted method in research. To enhance the quality of the study, the authors utilised the PRISMA approach instead of selecting literature randomly. As Benachio et al. (2020) highlighted, the PRISMA guidelines feature a four-phase flow diagram encompassing the stages of identification, screening, eligibility, and inclusion.

Research synthesis is essential for literature reviews with extensive samples, offering evidence-based insights for specific research questions (Lock & Giani, 2021). SLRs are more effective than bibliometric or narrative reviews, requiring an unbiased and transparent approach (Rowley & Paul, 2021). PRISMA is a widely recognised reporting guideline that addresses issues in systematic reviews, ensuring rigour and reducing bias (Page et al., 2021). Due to the complex nature of this study, PRISMA's comprehensive guidelines were deemed suitable, aiding transparent reporting. Consequently, Figure 1 illustrates the development of the PRISMA four-phase flow diagram utilised in this research.

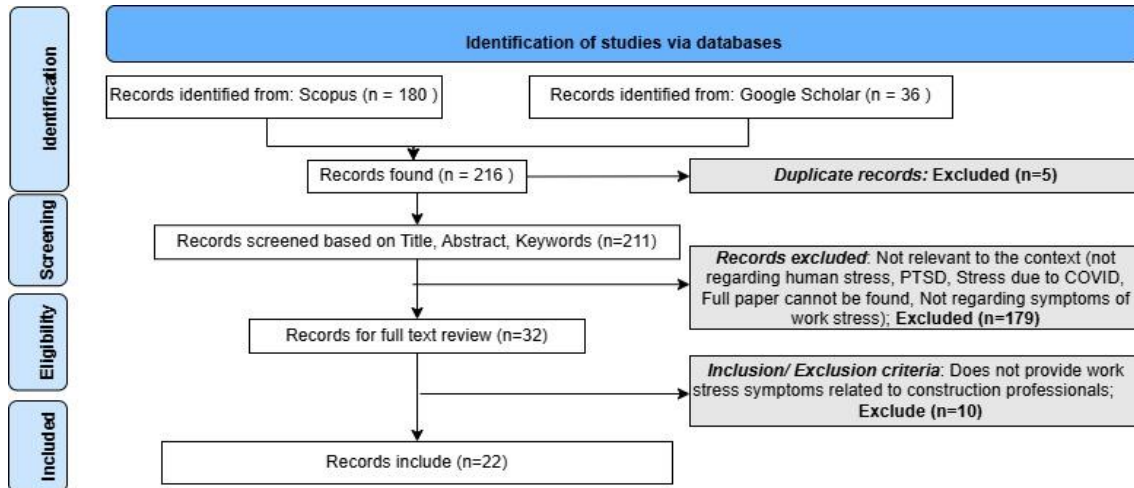


Figure 1: PRISMA Flow diagram of the study selection

Accordingly, Figure 1 demonstrates the process of literature identification from Scopus and Google Scholar, followed by the screening procedures conducted following the eligibility criteria, ultimately resulting in the final records included in this study.

3.1 SEARCH WORDS AND STRINGS

Background knowledge of occupational stress and stress management is essential to develop an effective search string. This understanding is enhanced through an extensive review of relevant literature. Formulating the research aim and objectives is the foundation for developing the search string. Subsequently, relevant databases were identified, and Scopus and Google Scholar were selected for this study. Accordingly, the search string used in this literature review is as follows:

("job stress*" OR "work* stress*" OR "workplace* stress*" OR "occupation* stress*" OR "job* stressor*" OR "work* stressor*" OR "workplace* stressor*" OR "occupation* stressor*" OR "job* stress* symptom*" OR "work* stress* symptom*" OR "workplace* stress* symptom*" OR "occupation* stress* symptom*" OR "job* stress* manage*" OR "work* stress* manage*" OR "workplace* stress* manage*" OR "occupation* stress* manage*" AND "construction*" AND NOT "trauma*" AND NOT "burnout" AND NOT "worker*" OR "labourer*" OR "labor*")*

Given the long-standing nature of the occupational stress concept, the timeline was not restricted. The search was limited to peer-reviewed articles in the English language, excluding major clinical studies, as they focus on the medical aspects of stress rather than the social dimensions of occupational stress relevant to the research participants. During the abstract and full-text review, articles were excluded if they were not pertinent to the context (e.g., unrelated to human stress, PTSD-Post Traumatic Stress Disorder, stress due to COVID-19, inaccessible full papers, or not concerning work stress symptoms). Articles that did not address work stress symptoms related to construction professionals were excluded. As shown in Figure 1, 22 papers were included in this study.

4. RESEARCH FINDINGS AND DISCUSSION

4.1 STRESS SYMPTOMS OF CONSTRUCTION PROFESSIONALS

When considering the literature on stress symptoms, there is a considerable lack of literature focusing on separate professional groups in the construction industry. However, the authors identified 22 articles for content analysis after conducting the SLR. After conducting the content analysis, the identified stress symptoms were categorised into three categories i.e. (i) psychological/state of mind, (ii) behavioural, and (iii) physical/physiological, as discussed in the sections below.

4.1.1 Psychological/State of Mind

The researchers with a psychological orientation emphasised micro-level characteristics as factors affecting work stress. In contrast, stress-orientated epidemiologists turned to studying specific occupational stress to identify new risks and experiences occurring in work life (Väänänen et al., 2012). Psychological symptoms of stress pertain to the mental and emotional well-being of construction professionals and affect how individuals think, feel, and process information, often leading to emotional disturbances and cognitive impairments (Love et al., 2010). These symptoms can severely impact a worker's ability to focus, make decisions, and maintain emotional stability, ultimately affecting their overall mental health and job performance (Adhikari et al., 2023). Accordingly, 41 factors were identified as the psychological symptoms of stress for construction professionals, as shown in Figure 2.

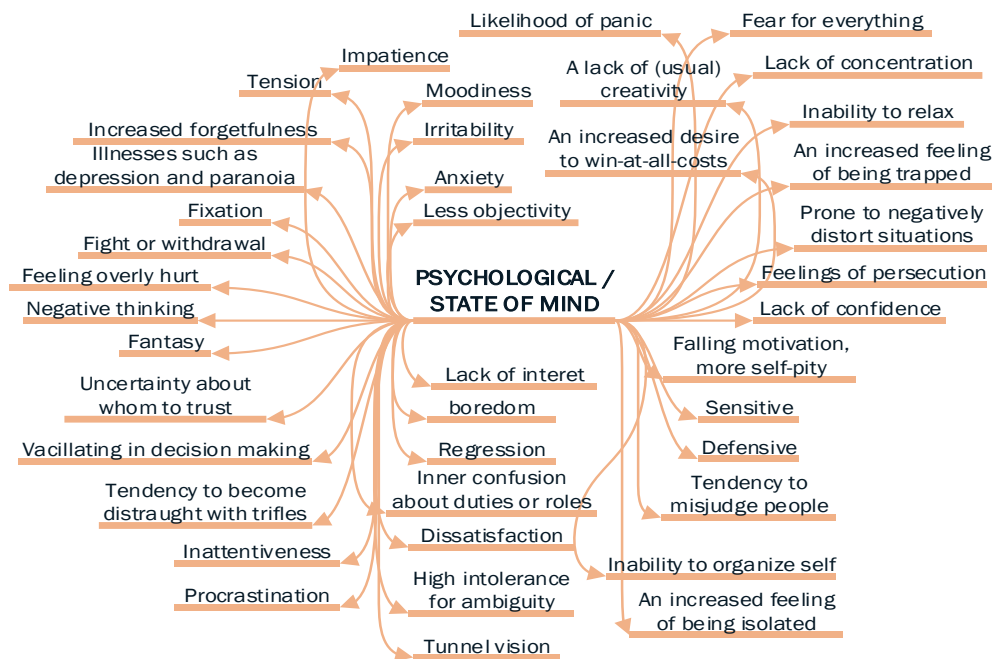


Figure 2: Psychological stress symptoms of construction professionals

Chan et al. (2016), Haydam and Smallwood (2016) and Rosen et al. (2010) have identified a range of psychological symptoms that are prevalent among construction professionals, such as an inability to relax, tunnel vision, a tendency to misjudge people, and irritability. Similarly, common psychological symptoms reported in the literature include anxiety, depression, mood swings, and a sense of being overwhelmed (Patching,

2022). Figure 2 summarises the psychological symptoms reported in 22 relevant studies focused on construction professionals.

4.1.2 Behavioural

Behavioural symptoms of stress are reflected in the actions and habits of construction workers, encompassing both individual and organisational behaviours (Brenda & Steve, 2006). Recognising these behavioural changes is crucial for addressing stress at both personal and organisational levels.

4.1.2.1 Individual

On an individual level, these symptoms include changes in eating and sleeping patterns, increased use of alcohol or drugs, withdrawal from social interactions, and decreased productivity. The SLR revealed 44 individual behavioural symptoms of stress of construction professionals as presented in Figure 3. These symptoms range from emotional responses such as irritability and anxiety to physical manifestations including headaches and fatigue. Construction professionals often face significant stress due to the demanding nature of their work, which can lead to both mental and physical health issues. Recognising these symptoms is imperative for implementing effective stress management strategies. However, in the construction industry, identifying stress symptoms among professionals remains challenging. Many researchers including Adhikari et al. (2023) argued that many individuals attempt to conceal their stress symptoms, making accurate identification difficult. This reluctance to acknowledge stress can hinder efforts to address and manage these issues effectively, exacerbating the problem within the industry.

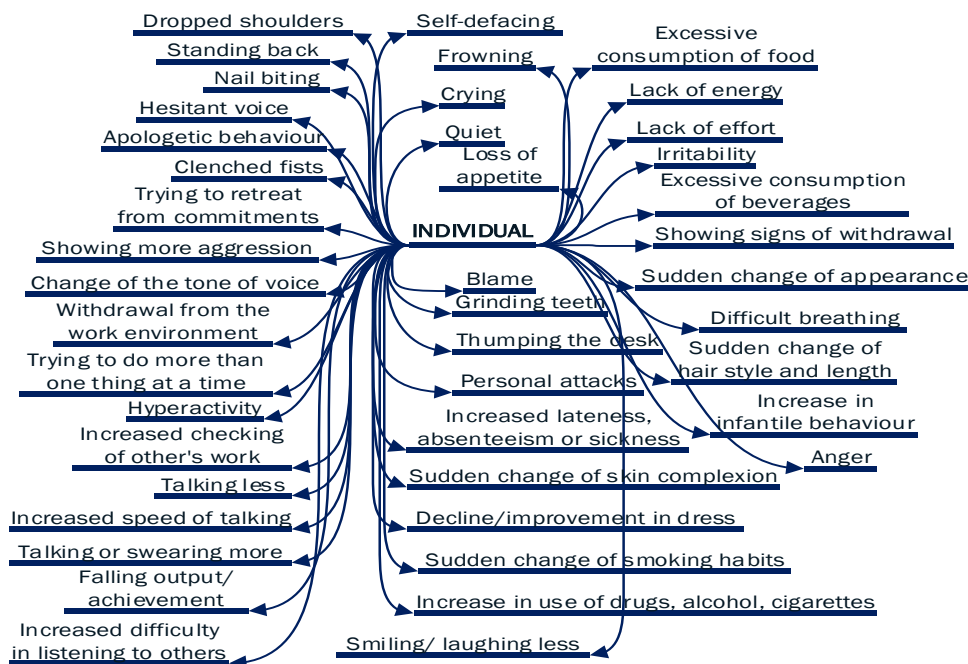


Figure 3: Behavioural (individual) stress symptoms of construction professionals

Figure 3 provides a summary of individual behavioural stress symptoms. As identified by (Zhou et al., 2022), these symptoms can manifest visibly to others through signs such as frowning, crying, changes in hairstyle, and even reduced smiling.

4.1.2.2 Organisational

Organisational behavioural symptoms involve broader patterns within the workplace, such as increased absenteeism, high turnover rates, reduced team collaboration, and conflicts among workers. The SLR revealed 09 organisational behavioural symptoms of stress as presented in Figure 4.

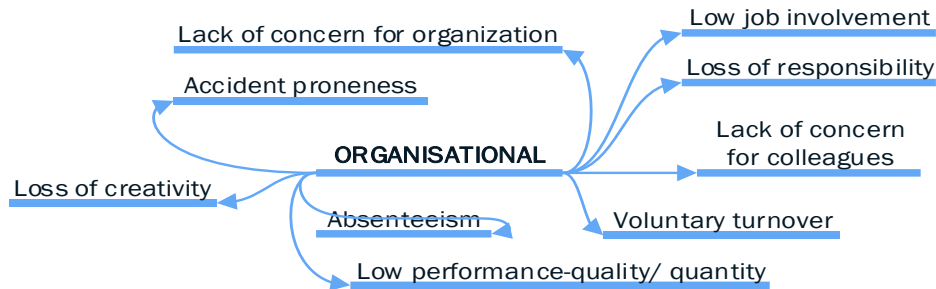


Figure 4: Behavioural (organizational) stress symptoms of construction professionals

As illustrated in Figure 4, organisational behavioural stress symptoms include absenteeism and voluntary turnover, as documented by Glasscock et al. (2006) and Jung et al. (2020).

4.1.3 Physical/Physiological

Physical or physiological symptoms of stress manifest in the body and can significantly impair a construction worker's physical health (Abbe et al., 2011). These symptoms include headaches, muscle tension, fatigue, gastrointestinal issues, and cardiovascular problems. Chronic stress can weaken the immune system, making workers more susceptible to illnesses and injuries. Identifying and addressing these physical symptoms is vital for maintaining the health and safety of construction workers, ensuring they can perform their physically demanding tasks effectively. The SLR revealed 20 physical symptoms of stress.

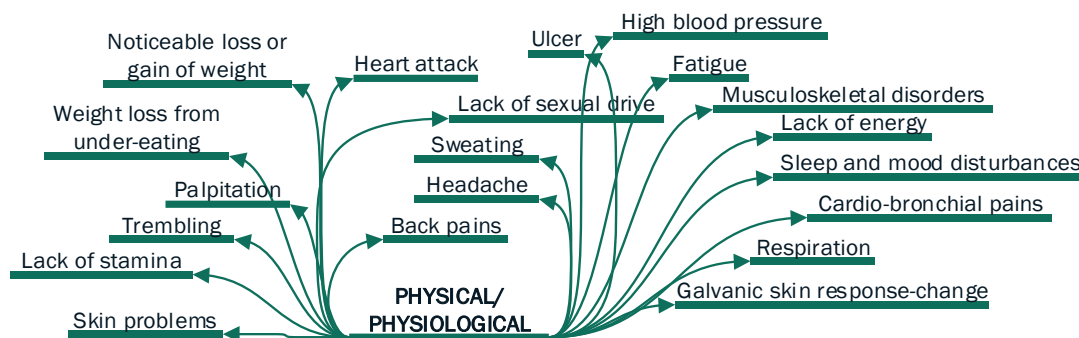


Figure 5: Physical/ Physiological stress symptoms of construction professionals

Authors Abbe et al. (2011), Nixon et al. (2011) and Wei et al. (2020) emphasise physical stress symptoms, including headaches, back pain, and noticeable weight changes. These symptoms are illustrated in Figure 5.

5. CONCLUSIONS

This systematic literature review has highlighted the multifaceted nature of stress experienced by construction professionals, categorizing the identified symptoms into

psychological/state of mind, behavioural, and physical/physiological domains. The psychological symptoms, encompassing anxiety, depression, and irritability, underscore the significant mental health challenges faced by these workers. Behavioural symptoms, both individual and organisational, reflect the impact of stress on daily routines, productivity, and workplace dynamics. Physical/physiological symptoms such as headaches, muscle tension, and fatigue further illustrate stress's toll on the body.

Understanding these symptoms is crucial for developing comprehensive strategies to address and mitigate stress in the construction industry. By recognising and categorising these symptoms, this review provides a foundation for targeted interventions to improve construction professionals' overall well-being and safety. The findings emphasise the need for holistic approaches considering mental, behavioural, and physical health aspects to manage stress and enhance job performance effectively.

5.1 CONTRIBUTION OF THIS PAPER

This paper makes several significant contributions to the construction industry's existing knowledge of occupational stress. By systematically categorising stress symptoms into psychological, behavioural, and physical/physiological domains, this paper provides a clear framework for understanding the diverse manifestations of stress among construction professionals. This categorisation aids in identifying specific areas where interventions are needed. The review underscores the importance of a holistic approach to managing stress. Stakeholders can develop more effective and comprehensive stress management programs by collectively addressing psychological, behavioural, and physical health. The detailed identification and analysis of stress symptoms offer valuable insights for employers, policymakers, and healthcare providers. These insights can guide the design and implementation of targeted interventions, such as mental health support services, stress management training, and workplace safety enhancements. This paper lays the groundwork for future research by highlighting gaps in the current literature and suggesting areas for further investigation. Future studies can build on these findings to explore the long-term effects of stress in construction workers and evaluate the efficacy of various intervention strategies. For construction companies and industry stakeholders, the findings provide practical implications for improving worker well-being and productivity. Implementing the recommended strategies can lead to a healthier, more motivated workforce, ultimately enhancing overall industry performance. This paper advances our understanding of stress symptoms in construction professionals and serves as a valuable resource for developing effective stress management interventions. By addressing the identified symptoms through targeted strategies, the construction industry can create a safer and more supportive work environment, promoting the health and well-being of its workers.

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